

**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT NO. M110734P1-99**

I. INTRODUCTION

This permit is for the operation the Morenci mine (Morenci) which is located on U.S. Highway 191 in Morenci, Greenlee County, Arizona. Phelps Dodge Morenci, Inc. (PDMI) operates the open pit copper mine, ore processing and copper extraction facilities. PDMI holds an 85 percent undivided ownership interest in the Morenci operations; the rest of the 15 percent is owned by Sumitomo Metal Mining Co., Ltd. and Sumitomo Corporation.

A. Company Information

Facility Name: Morenci Branch

Mailing Address: 4521 U.S. Hwy 191, Morenci, Greenlee County, AZ 85540-9795

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B. Attainment Classification (Source: 40 CFR §81.303)

Table 1 summarizes the attainment classification of Morenci.

Table 1: Attainment Classification

Pollutant	Designated Area	Status
PM-10	NA	Unclassified/Attainment
SO ₂	Morenci: T3S; R28E, R29E; and R30E	Nonattainment
	Morenci: T4S; R28E, R29E; and R30E	Nonattainment
	Morenci: T5S; R28E, R29E; and R30E	Nonattainment
CO	NA	Unclassified/Attainment
O ₃	NA	Unclassified/Attainment
NO ₂	NA	Unclassified/Attainment

II. PROCESS DESCRIPTION

The maximum annual process rate for the entire PDMI is based on the maximum possible mining rate anticipated for the operations which is 1,100,000 tons per day (tpd); currently, PDMI mines

between 800,000 tpd and 900,000 tpd. The maximum process rate for the mills and concentrators is 7360 tons per hour. The maximum process rate for the SX/EW operations is approximately 3.16×10^6 gallons per hour. The maximum annual process rate is determined based on operations occurring 24 hours a day and 365 days a year. The maximum annual and hourly process flow rates for the operations at PDMI which generate emissions can be found in Section IV of the Class I permit application.

Mining at PDMI is accomplished through conventional drilling, blasting, loading, and hauling techniques. Ore grade material is divided into two classifications based on grade of copper. Sulfide bearing ore is hauled to the IPCC system for processing and delivery to the concentrators. Oxide and some sulfide bearing ore is hauled to the low-grade ore stockpile for current and future leaching and directed to the SX/EW process for copper recovery.

Operating facilities considered primary sources of air emissions include the in-pit crushing and conveying (IPCC) system, the Morenci and Metcalf concentrator fine crushing facilities, and Metcalf combined cycle power plant (MCCP). Operating facilities considered secondary sources of air emissions include the Southwest lime plant and the concrete batch plant. Sources of fugitive emissions include mine haul roads, blasting, drilling, tailing impoundments, SX/EW plants, and fuel tanks. PDMI owns the Morenci steam power plant which was used to provide power for the mining operations when the former Morenci smelter was actively operating. The Morenci steam power plant is currently inactive and is on standby status.

A. Mining Operations

Ore processing begins with the drilling, blasting, shoveling, and loading stages within the active portions of the mine pit. Drilling and blasting are accomplished by drilling blastholes in a grid pattern of 24 to 30 ft spacing. Holes are drilled with 12.25 and 13.75 inch diameter drill bits to an average depth of 65 ft. The holes are then loaded with 1400 lbs of ammonium nitrate and fuel oil (ANFO) explosive to the bottom 30 ft and topped off with 35 ft of stemming which is a sand and gravel mixture. The explosives are detonated and reduce the hard rock ore to manageable size for processing. Once the ore has been broken by blasting, the ore is loaded and hauled by using electric shovels and haul trucks that deliver ore to either the IPCC system for ultimate delivery to the concentrators or the SX/EW ore stockpiles for leaching. As part of mining operations, PDMI operates a mobile screening plant with a capacity of 300 tons per hour (tph) for producing road base and stemming material.

Air Pollution Control Devices

PDMI uses enclosed wet drilling and wet shovel loading techniques. These help in reducing the amount of particulate matter emissions.

B. In-Pit Crushing and Conveying Process

The IPCC system consists of two in-pit crushers that have the capability to process 180,000 tpd each. Ore is delivered to each of the crushers via haul trucks where it is dropped into a dump pocket which gravity feeds the apron feeder. Material discharged from each crusher is delivered to the pit conveyor system by a crusher discharge conveyor. Ore from the discharge conveyor is transferred to a belt which then feeds the surge pile. From the surge pile, the ore is transferred to the mainline conveyor system through apron feeders. The mainline conveyor system (belts P2, P3, P4, P5, and P6) has a capacity to deliver 9000 tph. The intermediate ore stockpile (IOS) is at the discharge point of belt P6. Ore collected at the IOS is fed by seven pan feeders that deliver ore to two reclaim belts that provide ore for the Morenci and Metcalf secondary crushing and concentrator facilities. The IPCC system is designed to be relocated anywhere as the mine pits develop.

Alternate Operating Scenario

The in-pit crushers have the capacity to process 180,000 tpd each at maximum throughput capabilities. The IPCC conveyor system has the capacity to transport 216,000 tpd (9000 tph) from the two crushers. Based on this and 8344 hours of planned system operation per year (which takes into account the 8 hours of downtime per week), the throughput limitation is 75.1×10^6 tpy. Relocation of the crushers as the mine pits develop is also envisioned.

Air Pollution Control Devices

Several pollution control devices have been installed to suppress particulate matter (PM) emissions from the IPCC system. Devices and techniques include: Spray bars, scrubbers, and a baghouse. The spray nozzles are arranged at each transfer and discharge point along the IPCC system. The scrubbers are installed at the discharge point of each crusher and IOS discharge to reclaim conveyor. The baghouse is installed at the surge pile discharge.

Rated and Operating Efficiencies of Air Pollution Control Devices

The rated and operated efficiencies for the spray nozzles are not available. However, an efficiency rate of 90% as prescribed in AP-42, Appendix B.2, Table B.2-3 has been used.

Operating efficiency of the scrubbers have not been determined. However, an efficiency rate of 99% for wet scrubbers as prescribed in manufacturer specifications has been used. The rated efficiency for the surge pile baghouse according to the manufacturer is 99.99%.

C. Mill Process System

Sulfide ore delivered to the IOS is fed to the Metcalf and Morenci fine crushing plants by the reclaim conveyors that receive ore from the seven pan feeders located at the bottom of the IOS. A primary crusher remains on a standby status at the Morenci concentrator for periods when the in-pit or reclaim belts are shut down for preventative maintenance. Under this alternative operating scenario, locomotives deliver ore to the Morenci primary crusher from the Morenci pit.

1. Morenci Fine Crushing Plant and Concentrator

Ore delivered to the Morenci fine crushing plant is initially fed from reclaim belt R7 to the coarse ore bin. Ore from the coarse bin is fed across four grizzlies. Fine ore material passes through the grizzlies to a vibrating screen system. Coarse ore is separated from the fine ore as it passes over the grizzlies and into four fine crushing plants.

The secondary system is comprised of four heavy duty standard cone crushers. Crushed ore from the fine crushing plant is combined with the fine ore passing through the grizzlies at the vibrating screen. There are 16 vibrating screens. From the vibrating screens, ore is delivered to the tertiary crushers which consist of eight short head crushers. Ore from the tertiary crushers is fed to the Morenci fine ore storage bin. Ore fed to the fine ore bin is fed to the ball mills. There are 32 ball mills in the Morenci concentrator. Ore from the ball mills passes through spiral classifiers, floatation cells, regrind mills, wet cyclones, and finally the cleaner and scavenger cells. From the cleaner floatation cells the concentrate enters the column floatation cells where the copper concentrate is produced. Copper concentrate is directed to the copper concentrate thickeners. Tailing from the floatation process is routed to the tailings thickeners and delivered to tailing dams for disposal and reclaim water for reuse.

Alternate Operating Scenario

The operating scenarios envisioned by PDMI involve the use of a rail haulage

system to transport ore to the primary crusher of the Morenci concentrator in case of an upset event in the IPCC system to maintain production. Rail haulage can also be used to take ore from the IOS to the primary crusher. The rail haulage system consists of 84,480 ft of track and 18 diesel powered locomotive engines. The side dump rail cars are loaded using large front end loaders and are dumped via the train's compressed air system.

PDMI is also considering truck haulage in case of an upset event in the IPCC system. Haul trucks would be loaded with ore from IOS or the mine with the help of a front end loader and the load would be dumped in front of the coarse ore bin and pushed into the bin with the help of front end loader, bulldozer or other similar equipment.

Air Pollution Control Devices

Several pollution control devices have been installed to suppress particulate matter (PM) emissions from the Morenci fine crushing plant. Devices and techniques include spray bars and scrubbers. The spray nozzles are arranged at each transfer and discharge point along the Morenci concentrator. The scrubbers (totaling 21) are installed at the Morenci primary crusher, coarse ore bin, fine crushing, and fine ore bin.

Rated and Operating Efficiencies of Air Pollution Control Devices

The rated and operated efficiencies for the spray nozzles are not available. However, an efficiency rate of 90% as prescribed in AP-42, Appendix B.2, Table B.2-3 has been used. Operating efficiency of the scrubbers have not been determined. However, an efficiency rate of 99% for wet scrubbers as prescribed in manufacturer specifications has been used.

2. Metcalf Fine Crushing Plant and Concentrator

Ore is delivered to the Metcalf fine crushing plant from reclaim belt R6 and is initially fed to the Metcalf coarse ore storage bin. Ore from the coarse ore bin is then fed to three scalping screens. Fine ore passes through the scalping screens to the fine ore bin while coarse ore passes over the screens to the secondary crushers. The secondary crushing system consists of three heavy duty cone crushers. Ore from the secondary crushers is delivered to the three secondary double deck screens. Ore then enters the tertiary crushers. Each tertiary crusher

consists of seven shorthead cone crushers. Ore from the tertiary crushers is then delivered to 12 tertiary screens. Crushed ore is then fed into the Metcalf fine ore bin. Ore from the concentrator is then delivered to the Metcalf ball mills. There are 16 ball mills in the Metcalf concentrator. Ore from the ball mills passes through spiral classifiers, floatation cells, regrind mills, wet cyclones, and finally the cleaner and scavenger cells. From the cleaner floatation cells the concentrate enters the column floatation cells where the copper concentrate is produced. Copper concentrate is directed to the copper concentrate thickeners. Tailing from the floatation process is routed to the tailings thickeners and delivered to tailing dams for disposal and reclaim water for reuse.

The concentrate from both the Morenci and Metcalf concentrators are routed to a common thickener tank system for additional processing. The concentrate is further processed through a separate molybdenum floatation system where molybdenum concentrate is separated from the copper concentrate. The copper concentrate is then processed through a ceramic filter de-watering system and routed to the bedding plant where it is stored prior to rail car shipment to an off-site smelter.

Alternate Operating Scenario

The operating scenarios envisioned by PDMI involve the use of a rail haulage system to transport ore from the IOS to the Metcalf secondary crusher. The rail haulage system consists of 84,480 ft of track and 18 diesel powered locomotive engines. The side dump rail cars are loaded using large front end loaders and are dumped via the train's compressed air system. The Metcalf primary crusher has been placed on standby following the construction of the IPCC system.

PDMI is also considering truck haulage in case of an upset event in the IPCC system. Haul trucks would be loaded with ore from IOS or the mine with the help of a front end loader and the load would be dumped in front of the coarse ore bin and pushed into the bin with the help of a front end loader, bulldozer or other similar equipment.

Air Pollution Control Devices

Several pollution control devices have been installed to suppress particulate matter (PM) emissions from the Metcalf fine crushing plant. Devices and techniques include spray bars and scrubbers. The spray nozzles are arranged at each transfer

and discharge point along the Metcalf concentrator. The scrubbers (totaling 23) are installed at the Metcalf coarse ore bin, fine crushing, fine ore bin, ball mills, and Metcalf IOS.

Rated and Operating Efficiencies of Air Pollution Control Devices

The rated and operated efficiencies for the spray nozzles are not available. However, an efficiency rate of 90% as prescribed in AP-42, Appendix B.2, Table B.2-3 has been used. Operating efficiency of the scrubbers have not been determined. An efficiency rate of 99% for wet scrubbers as prescribed in manufacturer specifications has been used.

D. Southwest Lime Plant

The southwest lime plant produces slaked lime from calcined limestone delivered from an off-site source. The process includes mixing and grinding steps. Slaked lime is introduced to the milling process at the ball mill stage.

Air Pollution Control Devices

Pollution control devices that have been installed to suppress particulate matter (PM) emissions from the lime plant include a baghouse and a scrubber. The baghouse is used to control emissions from transfer points associated with the conveyors and the hoppers. The scrubber is used to control emissions from discharge points which feed the grinding circuit.

Rated and Operating Efficiencies of Air Pollution Control Devices

Operating efficiency of the scrubber has not been determined. However, an efficiency rate of 99% for wet scrubbers as prescribed in manufacturer specifications has been used. Rated efficiency of the baghouse is 99.99% as per the manufacturer.

E. Metcalf Combined Cycle Power Plant

Approximately 202MW (213 MW peak) of power are required to maintain current production rates at PDMI. Firm power demand supplied to PDMI by Arizona Electric Power Co-op is approximately 125 MW. MCCP has the capability of producing 63 MW of electricity and MSP has the capability of producing 60 MW of electricity.

The combined cycle power plant recovers waste heat in the exhaust gas from the two single cycle gas turbines by converting it to steam which, in turn runs a steam turbine generator. The resulting combined cycle base load net heat rate for MCCP is 9250 Btu/KWh. The maximum capacity net heat rate for MCCP is 9800 Btu/KWh.

Power generating equipment at MCCP consists of two General Electric turbines rated at 15,000 KW each and two General Electric condensing single extraction steam turbine generators. The steam turbine generators have a manufacturer's rating of 16,500 KW each and two Foster Wheeler heat recovery boilers (one for each gas turbine and all plant auxiliary systems). Each gas turbine is connected to its own waste heat recovery boiler by a hot gas duct so that each turbine and boiler form a separate unit. The Foster Wheeler heat recovery boilers were designed primarily as waste heat units to convert exhaust heat from the two gas turbines into recoverable power. In addition to straight waste heat recovery operations, each boiler can be fired with supplementary fuel to increase heat input during combined cycle operations. Natural gas is the standard fuel for firing the turbines. Diesel is used as supplementary fuel when needed for the boilers or turbines when interruptions in natural gas supplies occur. However, the use of diesel fuel in firing the boilers or turbines does not occur on a regular basis.

F. Morenci Steam Power Plant

The Morenci steam power plant was constructed to supply power to the PDMI branch smelter and mine facilities and *the Morenci townsite*. Following the latest upgrade to the powerhouse in 1968 the MSP had a generating capacity of approximately 77.5 MW. With the deactivation of the smelter and subsequent loss of supplementary heat from the waste heat boilers the total generating capacity of the powerhouse is 59.3 MW. The powerhouse has been shut down since the deactivation of smelter in 1984. However, it is still operable and may be brought back on line to support additional power needs at some point in the future. MSP has been historically operated on oil or natural gas fuel supplies. Natural gas would be the sole fuel used if the plant were reactivated. Table 2 gives the boiler and superheater fuel and capacity data at the MSP.

Table 2: Rated Capacity of Boilers and Superheaters at MSP

Equipment Name	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Superheater 1	Superheater 2
Year of Installation	1941	1941	1943	+612 31965	1941	1943

Equipment Name	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Superheater 1	Superheater 2
Rated Capacity	160,000 lbs/hr evaporation rate	160,000 lbs/hr evaporation rate	160,000 lbs/hr evaporation rate	160,000 lbs/hr evaporation rate	300,000 lbs steam/hr	300,000 lbs steam/hr
Fuel Type	Natural gas	Natural gas	Natural gas	Natural gas	Natural gas	Natural gas
Yearly Fuel Usage	2094 MM ft ³	2094 MM ft ³	2094 MM ft ³	1945 MM ft ³	403 MM ft ³	403 MM ft ³
Hourly Fuel Usage	0.239 MM ft ³	0.239 MM ft ³	0.239 MM ft ³	0.222 MM ft ³	0.046 MM ft ³	0.046 MM ft ³

Boilers 1 through 3 generate wet steam and need superheaters. Boiler 4 produces superheated steam. The superheated steam is then piped to the header which supplies the steam turbines. Electricity is generated with the help of six turbo generators. The turbo-generators consist of three General Electric 13.9 MW units, two Westinghouse 13.9 MW units, and one General Electric 15.0 MW unit. Electric power is generated by the steam turbines which rotate a stator inside a set of field coils to induce current. The maximum aggregate output of the steam turbines is 77.5 MW; however, without waste heat from the smelter operations the total generating capacity of the plant is 59.3 MW.

Air Pollution Control Devices

Both the Morenci and Metcalf power plants were constructed prior to regulations requiring installation of air pollution control devices. The boilers, turbines, and superheaters are however designed and operated to allow as efficient and complete combustion of fuel as possible. Combustion efficiency is adjusted by controlling the air-fuel mixture supply and maintaining the burners within the boilers, turbines, and superheaters properly. There are no air pollution control devices at either of these power plants.

G. Solution Extraction/Electrowinning Process

Oxide and some sulfide ore are placed in stockpiles and leached with raffinate, a weak acid aqueous solution. Leaching is accomplished by applying the raffinate to the leach ore stockpiles by typical sprinkler irrigation spray heads or drip emitters. The raffinate percolates through the stockpile recovering the copper values and exiting the toe of the stockpile as pregnant leach solution (PLS). The PLS is collected in ponds and pumped to a solution extraction plant where copper is extracted from the PLS and is joined with an organic based reagent. From the extraction process, copper is stripped from the

organic reagent and joined with a water/acid based electrolyte solution. The electrolyte solution is sent to the electrowinning tankhouse where copper cathode is produced.

There are four SX facilities at the PDMI operations including the Modoc SX, Metcalf SX, Central SX, and Southwest SX plants. The Modoc and Metcalf facilities consists of two circuits of mixer-settler tanks in a series configuration with a flow capacity of 24,000 gallons per minute (gpm). The Central SX plant consists of one circuit of four mixer-settler tanks in a parallel series alignment and has a nominal flow rate capacity of 12,000 gpm. The Southwest SX plant is similar to Central SX and has a capacity of 6000 gpm.

The three 20.9 million Btu/hr small industrial steam generating units are used to heat water which is routed through a heat exchanger which then transfers heat to the electrolyte solution used in the tankhouse. This heat is required to optimize copper plating on the stainless steel blanks used for cathode copper formation. The five Hot water heating units are used to provide water for washing the final cathode copper products for packaging prior to shipment. All the steam generating units and the water heating units are operated by natural gas.

Air Pollution Control Devices

The SX facilities' potential to emit VOCs is highly reduced by maintaining steady state condition during operations and using covered mixer-settler tanks. The sulfuric acid mist in the tankhouses is also reduced by the use of a special foam. Only natural gas is fired in the steam generating units and water heaters to lower the emissions of sulfur dioxide and PM.

H. Concrete Batch Plants

PDMI owns and operates a concrete batch plant; additionally, an off-site contractor uses the plant under PDMI's supervision. The concrete batch plant is a Ross Boss V.P. 12 cubic yard unit. The emissions from the batch plant are uncontrolled.

III. EMISSIONS

A. Calculations

Methods used to calculate the potential emissions from sources at PDMI operations are based on emission factors provided in AP-42. Emissions of particulate matter for the 10 micron size range (PM-10) were calculated using AP-42 factors from Section 11.24

Metallic Minerals Processing, Table 11.24.2. The factors are for ore with high moisture content (greater than 4 weight percent).

Regulated air pollutants emitted from Metcalf combined cycle power plant (MCCP) and Morenci steam power plant (MSP) include sulfur dioxide, nitrogen oxides, carbon monoxide, VOCs, and PM-10. Emissions from the power plants were calculated using AP-42 factors given in Tables 1.4.1 and 1.4.2 for natural gas combustion in utility/large industrial boilers (> 100 MMBtu/hr), and Table 3.1.2 for natural gas combustion in turbines for electricity generation.

Regulated air pollutants emitted from the diesel generator include sulfur dioxide, nitrogen oxides, carbon monoxide, VOCs, and PM-10. Emissions from the diesel generator were calculated using AP-42 factors given in Table 3.4.2 for burning diesel in large stationary diesel engines.

Regulated air pollutants emitted from instantaneous hot water heaters in the SX/EW plants include sulfur dioxide, nitrogen oxides, carbon monoxide, VOCs, and PM-10. Emissions from these were calculated using AP-42 factors given in Tables 1.4.1 for natural gas combustion in commercial boilers. The emissions from the small industrial steam generators were obtained from the manufacturer's engineering design.

Although not included in this document, non-point source, or fugitive emissions from material handling, and other operations were calculated by the applicant using AP-42 factors (Section 11.24 Metallic Minerals Processing, Table 11.24.2) and can be found in Section X of the Class I permit application. Similarly, for sand and gravel operations emission factors from Table 11.19.2-2 for crushed stone processing operations were used. The emission factors for the concrete batch plant was obtained from Table 11.12-2 in AP-42. Haul road emissions were calculated using the empirical expression found in Section 13.2.2 in AP-42. A 90% reduction achieved through use of control was utilized. Emission factors from Section 13.3 in AP-42 for detonations were used to estimate emissions from blasting.

Fugitive emissions of VOCs from the tanks in the tank farm were calculated by the applicant based on the information presented in Tanks 3.0 software and can be found in Section X of the permit application. Similarly, potential VOC emissions from SX/EW plants were estimated using the worksheet method for calculating VOC emissions from fixed roof storage tanks provided by the Department and can be found in Section X of the permit application. Sulfuric acid mist from the tankhouses were estimated assuming the maximum allowable exposure limit permitted by OSHA and multiplying this by the air flow

rate of the building and can be found in Section X of the application.

Table 3 summarizes the potential to emit (PTE), the allowable emissions, and the test results from the mine and the concentrators. Please refer to the memo dated March 10, 1999 from Balaji Vaidyanathan of ADEQ regarding the protocol for calculating the allowable emissions at the mine and the concentrators. Table 4 summarizes the PTE, the allowable emissions, the test results, and the emissions inventory (EI) from the fuel burning equipment at Morenci. Table 5 summarizes the PTE from the entire plant for all pollutants.

Potential emissions from Morenci are presented in the following table. They may be used for the following purposes:

- (i) Ascertaining “major source” status of Morenci pursuant to CAA Sec 501 (2);
- (ii) Comparing source potential-to-emit with emission rates allowable by relevant standards; and
- (iii) Comparing source potential-to-emit with emissions inventory and test data.

This comparison serves as a summary of existing information on emissions from Morenci. These emissions calculations are **not** meant to establish any baseline emissions levels. These emissions figures (except for the ALLOWABLE emissions) are **not** meant to be emissions limitations of any form.

Table 3: Emissions Data for the Mine and the Concentrators

Process Source/Stack No./Description	Pollutant	PTE (tpy)	Allowable Emissions (tpy)	Test Data
Mine (Non-NSPS)	PM	289.17	518.55	--
Mine (NSPS)/001/Primary Crusher No. 1 Wet Scrubber	PM	16.43	0.05 gm/dscm (24.85 tpy)	N/A
Mine (NSPS)/002/Primary Crusher No. 2 Wet Scrubber	PM	16.43	0.05 gm/dscm (24.85 tpy)	N/A
Concentrators (Non-NSPS)	PM	443.21	518.55	--
Concentrators (NSPS)/084/Metcalf Track Hopper Wet Scrubber No. 3A	PM	6.99	0.05 gm/dscm (34.84 tpy)	0.019 gm/dscm
Concentrators (NSPS)/085/Metcalf Fine Crushing Wet Scrubber No. 6	PM	4.27	0.05 gm/dscm (34.18 tpy)	0.008 gm/dscm

Process Source/Stack No./Description	Pollutant	PTE (tpy)	Allowable Emissions (tpy)	Test Data
Concentrators (NSPS)/088/Metcalf Fine Crushing Wet Scrubber No. 4	PM	11.26	0.05 gm/dscm (34.84 tpy)	0.004 gm/dscm
Concentrators (NSPS)/092/Metcalf Fine Crushing Wet Scrubber No. 1	PM	2.14	0.05 gm/dscm (18.03 tpy)	0.011 gm/dscm
Concentrators (NSPS)/093/Metcalf Fine Crushing Wet Scrubber No. 2	PM	2.67	0.05 gm/dscm (42.21 tpy)	0.025 gm/dscm
Concentrators (NSPS)/096/Metcalf Fine Ore Bin Wet Scrubber No. 15	PM	1.2	0.05 gm/dscm (8.2 tpy)	0.0063 gm/dscm
Concentrators (NSPS)/101/Metcalf Ball Mill Belts Wet Scrubber No. 14	PM	2.4	0.05 gm/dscm (9.83 tpy)	0.005 gm/dscm
Southwest Lime Plant/106/Baghouse	PM	1.83	184.22	--
Southwest Lime Plant/107/Scrubber	PM	9.15	129.21	--

Table 4: Emissions Data for the Fuel Burning Equipment

Process No./Unit	Pollutant	PTE (tpy)	Allowable ⁽¹⁾ (tpy)	Test Data (tpy)
123 - Steam Generator (Natural gas)	PM	0.68	46.27	n/a
	SOx	0.05	n/a	n/a
	NOx	8.97	n/a	n/a
	VOCs	0.49	n/a	n/a
	CO	7.54	n/a	n/a
124- Hot Water Heater (Natural Gas)	PM	0.03	4.47	n/a
	SOx	0	n/a	n/a
	NOx	0.43	n/a	n/a
	VOCs	0.02	n/a	n/a
	CO	0.36	n/a	n/a

Process No./Unit	Pollutant	PTE (tpy)	Allowable ⁽¹⁾ (tpy)	Test Data (tpy)
125- Hot Water Heater (Natural Gas)	PM	0.03	4.47	n/a
	SO _x	0	n/a	n/a
	NO _x	0.43	n/a	n/a
	VOCs	0.02	n/a	n/a
	CO	0.36	n/a	n/a
126- Hot Water Heater (Natural Gas)	PM	0.03	4.47	n/a
	SO _x	0	n/a	n/a
	NO _x	0.43	n/a	n/a
	VOCs	0.02	n/a	n/a
	CO	0.36	n/a	n/a
127- Hot Water Heater (Natural Gas)	PM	0.03	4.47	n/a
	SO _x	0	n/a	n/a
	NO _x	0.43	n/a	n/a
	VOCs	0.02	n/a	n/a
	CO	0.36	n/a	n/a
128- Hot Water Heater	PM	0.03	4.47	n/a
(Natural Gas)	SO _x	0	n/a	n/a
	NO _x	0.43	n/a	n/a
	VOCs	0.02	n/a	n/a
	CO	0.36	n/a	n/a
183- Steam Generator (Natural Gas)	PM	0.68	46.27	n/a
	SO _x	0.05	n/a	n/a
	NO _x	8.97	n/a	n/a
	VOCs	0.49	n/a	n/a
	CO	7.54	n/a	n/a

Process No./Unit	Pollutant	PTE (tpy)	Allowable ⁽¹⁾ (tpy)	Test Data (tpy)
184- Steam Generator (Natural Gas)	PM	0.68	46.27	n/a
	SO _x	0.05	n/a	n/a
	NO _x	8.97	n/a	n/a
	VOCs	0.49	n/a	n/a
	CO	7.54	n/a	n/a
108 - Turbine No. 1 (Natural Gas)	PM	45.4	309.46	n/a
	SO _x	0.08	n/a	n/a
	NO _x	476.8	n/a	n/a
	VOCs	26.01	n/a	n/a
	CO	119.2	n/a	n/a
109 - Boiler No. 1 (Natural Gas)	PM	8.06	309.46	n/a
	SO _x	0.64	n/a	n/a
	NO _x	296.86	n/a	n/a
	VOCs	5.83	n/a	n/a
	CO	89.06	n/a	n/a
110 - Turbine No. 2 (Natural Gas)	PM	45.4	309.46	n/a
	SO _x	0.08	n/a	n/a
	NO _x	476.8	n/a	n/a
	VOCs	26.01	n/a	n/a
	CO	119.2	n/a	n/a
111 - Boiler No. 2 (Natural Gas)	PM	7.5	292.39	n/a
	SO _x	0.59	n/a	n/a
	NO _x	276.43	n/a	n/a
	VOCs	5.43	n/a	n/a
	CO	82.93	n/a	n/a
177 - Boiler No. 1 (Natural Gas)	PM	8.06	309.46	n/a
	SO _x	0.64	n/a	n/a

Process No./Unit	Pollutant	PTE (tpy)	Allowable ⁽¹⁾ (tpy)	Test Data (tpy)
	NOx	296.86	n/a	n/a
	VOCs	5.83	n/a	n/a
	CO	89.06	n/a	n/a
178 - Boiler No. 2 (Natural Gas)	PM	8.06	309.46	n/a
	SOx	0.64	n/a	n/a
	NOx	296.86	n/a	n/a
	VOCs	5.83	n/a	n/a
	CO	89.06	n/a	n/a
179 - Boiler No. 3 (Natural Gas)	PM	8.06	309.46	n/a
	SOx	0.64	n/a	n/a
	NOx	296.86	n/a	n/a
	VOCs	5.83	n/a	n/a
	CO	89.06	n/a	n/a
180 - Boiler No. 4 (Natural Gas)	PM	7.5	292.39	n/a
	SOx	0.59	n/a	n/a
	NOx	276.43	n/a	n/a
	VOCs	5.43	n/a	n/a
	CO	82.93	n/a	n/a
181-Superheater No. 1 (Natural Gas)	PM	1.55	87.15	n/a
	SOx	0.12	n/a	n/a
	NOx	20.43	n/a	n/a
	VOCs	1.12	n/a	n/a
	CO	17.16	n/a	n/a
182-Superheater No. 2 (Natural Gas)	PM	1.55	87.15	n/a
	SOx	0.12	n/a	n/a
	NOx	20.43	n/a	n/a
	VOCs	1.12	n/a	n/a

Process No./Unit	Pollutant	PTE (tpy)	Allowable ⁽¹⁾ (tpy)	Test Data (tpy)
	CO	17.16	n/a	n/a

Table 5: Potential to Emit

Source	PM10 (tpy)	SO ₂ (tpy)	NO _x (tpy)	CO (tpy)	VOC tpy	H ₂ SO ₄ tpy
Mining - Point	21.66	--	--	--	--	--
Morenci Concentrator - Point	98.58	--	--	--	--	--
Metcalf Concentrator - Point	61.78	--	--	--	--	--
Southwest lime plant - Point	0.15	--	--	--	--	--
MCCP - Point	93.24	2.12	1415.76	268.34	27.06	--
Diesel gen. - Point	11.82	10.93	648.4	142.91	1.79	--
SX/EW - Point	3.01	0.40	35.11	41.69	4.52	--
MSP - Point	23.08	2.71	2318.85	178.64	7.03	--
Subtotal	313.32	16.16	4418.12	631.58	40.4	--
Mining - Nonpoint	1767.9	87.75	737.34	2906	--	--
Morenci Concentrator - Nonpoint	18.26	--	--	--	--	--
Metcalf Concentrator - Nonpoint	25.8	--	--	--	--	--
Concentrate bedding plant - Nonpoint	13.14	--	--	--	--	--
Concrete batch plant - Nonpoint	1.05	--	--	--	--	--
SX/EW - Nonpoint	--	--	--	--	7.59	--
EW tankhouse - Nonpoint	--	--	--	--	--	19.66
Tank farm - Nonpoint	--	--	--	--	35.25	--
Tailing dam - Nonpoint	1.64	--	--	--	--	--

Source	PM10 (tpy)	SO ₂ (tpy)	NO _x (tpy)	CO (tpy)	VOC tpy	H ₂ SO ₄ tpy
Subtotal	1827.79	87.75	737.34	2906	42.84	19.66
Total	2141.11	103.91	5155.46	3537.58	83.24	19.66

IV. COMPLIANCE HISTORY

A. Testing

The results of the some of the latest compliance tests have been summarized in Table 6. Results show that the units are in compliance with the applicable standards.

Table 6: Results of Performance Tests

Date of Test	Equipment Tested	Pollutants Tested	Results
3/18/97	Metcalf Ball Mill Belts Wet Scrubber No. 15	Particulate Matter	Passed
11/26/96	Metcalf Ball Mill Belts Wet Scrubber No. 14	Particulate Matter	Passed
6/5/96	Metcalf Fine Crushing Wet Scrubber No. 2	Particulate Matter	Passed
6/4/96	Metcalf Fine Crushing Wet Scrubber No. 4	Particulate Matter	Passed
5/7/96	Metcalf Fine Crushing Wet Scrubber No. 6	Particulate Matter	Passed
4/10/96	Metcalf Track Hopper Wet Scrubber No. 3A	Particulate Matter	Passed
4/9/96	Metcalf Fine Crushing Wet Scrubber No. 1	Particulate Matter	Passed
9/29/92	Portable Screening Plant	Visible Emission Testing	Passed
7/29/92	Surge Pile Baghouse	Particulate Matter and Visible Emission	Passed

B. Inspections

Inspections are being regularly conducted on this source to ensure compliance with the permit conditions. PDMI is currently in compliance with the permit conditions cited in Permit Nos. 0325-85, 1204, and 1235 as modified by various minor permit revisions. It has not had a single outstanding compliance issue since it was first permitted in 1985. A

notice of violation (NOV) was issued to PDMI on November 9, 1990 for opacity violations at the ore stacker. However, after making some operational changes that produced the desired result of lowering the opacity, the NOV was closed. Table 7 summarizes some of the recent inspections that have been conducted on the source and the results of the inspections.

Table 7: Inspections

Inspection Date	Type of Inspection	Results
6/11/97	Level 1(complaint)	No violations were noticed during this inspection.
3/6/97	Level 1(complaint)	No violations were documented during this inspection.
12/30/96	Level 3 (performance test)	Compliance test on Metcalf mill scrubber no. 14 for particulate matter. The tests indicated compliance of the source with the applicable regulations.
6/11/96	Level 3 (performance test)	Compliance test on Metcalf fine crushing and track hopper scrubber nos. 4 and 2 for particulate matter. The tests indicated compliance of the source with the applicable regulations.
5/7/96	Level 3 (performance test)	Compliance test on Metcalf crusher scrubber no. 6 for particulate matter. The tests indicated compliance of the source with the applicable regulations.
4/17/96	Level 3 (performance test)	Compliance test on scrubber nos. 1 and 3A for particulate matter. The tests indicated compliance of the source with the applicable regulations.
7/31/95	Level 1	No violations were noticed during this inspection.
7/24/1995	Level 2	Fugitive emissions from haul roads and blasting were observed. No violations were noticed during this inspection.
8/18/94	Level 2	Opacities of the units at the Morenci crushing mill were within 0-5%. Opacity from the IOS scrubber was within 0-5%. Opacity from the IOS was around 20%. Opacity from the lime plant baghouse was 0-5%. Opacity from the lime plant scrubber was within 5-10%. No violations were noticed during this inspection.

Inspection Date	Type of Inspection	Results
7/27/93	Level 2	Opacity from the lime plant baghouse was 15.8%. No violations were noticed during this inspection.
10/2/92	Level 3 (performance test)	Opacity from the crushers were within 2-3%. No violations were noticed during this inspection.
8/25/92	Level 2	No violations were documented during this inspection.
7/31/92	Level 3	Compliance test on the surge pile baghouse for particulate matter. Opacity of the plume from the baghouse was zero. The tests indicated compliance of source with the applicable regulations.

C. Compliance Certifications and Compliance Plan

After the issuance of this Part 70 permit, the Permittee will be required to submit compliance certifications every six months as indicated in Section VII of Attachment "A" of the permit. PDMI has clearly specified in Section 11 of the permit application that it operates all emission units in compliance with applicable requirements and will continue to comply with all applicable requirements under the existing operating permits. In addition, PDMI will comply with all applicable requirements that become effective during the permit term on a timely basis.

PDMI has clearly specified in Section 11 of the permit application that it will submit an annual compliance certification report which will identify the status of compliance in terms of continuous or intermittent compliance. The annual compliance certification will be signed by the responsible official ascertaining the truth, accuracy, and completeness of the information provided. The certification will include information pertaining to the methods used for determining the compliance status of the sources of emissions from PDMI operations. The information will be based on monitoring results compiled over the reporting period as prescribed in the permit.

V. APPLICABLE REGULATIONS

The Permittee has identified the applicable regulations that apply to each unit in its permit application. Table 8 summarizes the findings of the Department with respect to the regulations that apply to each emissions source. Installation Permit and other previous permit conditions are discussed under Section VI of this technical review document.

Table 8: MINE - POINT SOURCES

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture /Installation	Applicable Regulations
001-005	001	IPCC - 1	Wet Scrubber (1988/1988)	1988/1988	Since the year of manufacture is 1988 which is after the trigger date (8/24/82) for Subpart LL, this is subject to the PM standard of 0.05 grams per dry standard cubic meter (g/dscm).
001-006	002	IPCC - 2	Wet Scrubber (1988/1988)	1988/1988	Since the year of manufacture is 1988 which is after the trigger date (8/24/82) for Subpart LL, this is subject to the PM standard of 0.05 grams per dry standard cubic meter (g/dscm).
001-012	003	Surge pile	Baghouse (1988/1988)	1988/1988	Although the year of manufacture is 1988 which is after the trigger date (8/24/82) for Subpart LL, the baghouse is subject to the process weight rate equation and 40% opacity standard. This is because the preamble to Subpart LL specifically excludes all conveyor transfer points located in an open-pit mine and between the mine and the milling, storage or waste rock disposal areas. A copy of the preamble is attached to this document.
001-018	004	IOS	Wet Scrubber (1988/1988)	1988	Same as above.

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture/ Installation	Applicable Regulations
002-022	5	Morenci primary crusher	Wet Scrubber (1981/1981)	1940	Since the year of manufacture is 1940 which is prior to the trigger date (8/24/82) for Subpart LL, this is subject to A.A.C. R18-2-721. The process weight rate equation and 40% opacity standard apply to this source.
002-023 and 002-024	006 and 007	Morenci coarse bin: CV 1A and 1B to bin	Wet Scrubbers 1 and 2 (1989/1989)	1940	Same as above.
002-025 to 002-028	008 to 011	Morenci Fine Crushing: North & South apron feeders to CVs 2A to 2D drop points.	Wet Scrubbers 2A through 2D (1990/1990)	1940	Same as above.
002-029	012	Morenci Fine Crushing: LINE A: Static grizzly; Symons std. cc; 4-single deck screens; 2-Symons shorthead cc; drop to conv 3.	Wet Scrubber 1 (1990/1990)	1940	Same as above.
002-030	013	Morenci Fine Crushing: LINE B: Static grizzly; Symons std. cc; 4-single deck screens; and 2-Symons shorthead cc.	Wet Scrubber 2 (1990/1990)	1940	Same as above.
002-031	014	Morenci Fine Crushing: LINE C: Static grizzly; Symons std. cc; 4-single deck screens;	Wet Scrubber 3 (1990/1990)	1940	Same as above.

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture/ Installation	Applicable Regulations
002-032	015	Morenci Fine Crushing: LINE D: Static grizzly; Symons std. cc; 4-single deck; 2-Symons shorthread cc screens; to CV 3A	Wet Scrubber 4 (1990/1990)	1940	Same as above.
002-033	016	Morenci Fine Crushing: LINE B to CV 3; LINE C to 3B; CV 3B to 3; CV 3B to 3A	Wet Scrubber 5 (1990/1990)	1940	Same as above.
002-034	017	Morenci Fine Crushing: Tail Pulley	Wet Scrubber 5B (1973/1973)	1940	Same as above.
002-035	018	Morenci Fine Crushing: CV3/4 and CV4/5 transfer points	Wet Scrubber 3-4-5 (1990/1990)	1940	Same as above.
002-036	019	Morenci Fine Crushing: CV3A/4A and CV4A/5A transfer points	Wet Scrubber 3A-4A-5A (1990/1990)	1940	Same as above.
002-037 to 002-042	020 to 025	Morenci Fine Ore Bin: CV 5 and 5A to Morenci fine ore bin	Wet Scrubbers 1 through 6 (1988/1988)	1940	Same as above.
002-043	027	Moly dryer exhaust fan stack	None	1941	This is subject to the process weight rate under A.A.C. R18-2-721 and the opacity standard under A.A.C. R18-2-702.B.

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture/ Installation	Applicable Regulations
002-044	028	Concentrate conveyor tunnels ventilation fan stack	None	1941	This is subject to the process weight rate under A.A.C. R18- 2-721 and the opacity standard under A.A.C. R18-2-702.B.

Operation Id No. - Process No.	Stack No.	Process Description	Control Equipment	Start-up Date	Applicable Regulations
003-082 and 003-083	030 and 031	Metcalf track hopper	Wet Scrubbers 3B and 3C (1974/1974)	1970	Since the year of manufacture is prior to the trigger date (8/24/82) for Subpart LL, this is subject to A.A.C. R18-2-721. The process weight rate equation and 40% opacity standard apply to this source.
003-084	032	Metcalf fine crushing: FD 2B1, 2B2, 2A1, and 2A2 to CV 3C; FD 2B3 and 2B4 to CV 3B2; FD 2A3 and 2A4 to CV 3A2; FD 2B5 and 2B6 to CV 3B3; FD 2A5 and 2A6 to CV 3A3; CV 3C to 4C; CV 3B2 and 3B3 to CV 4B; CV 3A2 and 3A3 to CV 4A.	Wet Scrubber 3A. Water agglomeration dust suppression systems on Cvs 4A, 4B, and 4C drop points (1974/1974)	1995	Since the year of manufacture is after the trigger date (8/24/82) for Subpart LL, this is subject to the PM standard of 0.05 grams per dry standard cubic meter (g/dscm).
003-085	033	Metcalf fine crushing: Std. sec. crshr A: (through sec. screen A1-A2) to CV7, CV8, and CV9; Std. sec. crshr B: (through sec. screen B1-B2) to CV7, CV8, and CV9; Scalper A to CV9; Scalper B to	Wet Scrubber 6 Raring Water ADS on all screens and crushers. ADS is planned for drop points on CVs 7, 8, and 9. (1989/1989)	1995	Since the year of manufacture is after the trigger date (8/24/82) for Subpart LL, this is subject to the PM standard of 0.05 grams per dry standard cubic meter (g/dscm).

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture /Installation	Applicable Regulations
003-086	034	Metcalf fine crushing: Tert. crshr. 1: (through tert. screens) to CV7, CV8, and CV9; Tert. crshr. 2: (through tert. screens) to CV7, CV8, and CV9.	Wet Scrubber 7A; Raring ADS on all screens and crushers. ADS is planned for all drop points (1989/1989)	1970	Since the year of manufacture is prior to the trigger date (8/24/82) for Subpart LL, this is subject to A.A.C. R18-2-721. The process weight rate equation and 40% opacity standard apply to this source.
003-087	035	Metcalf fine crushing: Tert. crshr. 3: (through tert. screens) to CV7, CV8, and CV9; Tert. crshr. 4: (through tert. screens) to CV7, CV8, and CV9.	Wet Scrubber 7B. Raring ADS on crushers and screens. ADS is being planned for drop points on CV7, CV8, and CV9 (1989/1989)	1970	Same as above.
003-088	036	Metcalf fine crushing: Tert surge bin; tert crshr 5 and 6 FD hopper	Wet Scrubber 4 (1989/1989)	1995	Since the year of manufacture is after the trigger date (8/24/82) for Subpart LL, this is subject to the PM standard of 0.05 grams per dry standard cubic meter (g/dscm).
003-089	037	Metcalf fine crushing: CV7/5, CV 8/11, and CV 11/5 transfer points	Wet Scrubber 5. Raring ADS on all drop points (1989/1989)	1970	Since the year of manufacture is prior to the trigger date (8/24/82) for Subpart LL, this is subject to A.A.C. R18-2-721. The process weight rate equation and 40% opacity standard apply to this source.
003-090	038	Metcalf fine crushing: CV5/6 transfer point	Wet Scrubber 8 (1989/1989)	1970	Same as above

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture /Installation	Applicable Regulations
003-091	039	Metcalf fine crushing: CV 9/14 transfer point and tert crshr 1 to 4 FD hopper	Wet Scrubber 13. Raring ADS on all drop points (1989/1989)	1970	Same as above.
003-092	068	Metcalf fine crushing: Std sec crshr C: (through sec screens C1-C2) to CVs 7, 8, and 9; Scalper to CV 9.	Wet Scrubber 1. Raring ADS on screens and crushers. ADS is planned for drop points on CV7, CV8, and CV9 (12/1/95)	1995	Since the year of manufacture is after the trigger date (8/24/82) for Subpart LL, this is subject to the PM standard of 0.05 grams per dry standard cubic meter (g/dscm).
003-093	069	Metcalf fine crushing: Tert. crshr. 5: (through tert. screens) to CV7, CV8, and CV9; Tert. crshr. 6: (through tert. screens) to CV7, CV8, and CV9.	Wet Scrubber 2. Raring ADS on screens and crushers. ADS is planned for drop points on CV7, CV8, and CV9 (2/13/96)	1995	Since the year of manufacture is after the trigger date (8/24/82) for Subpart LL, this is subject to the PM standard of 0.05 grams per dry standard cubic meter (g/dscm).

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture /Installation	Applicable Regulations
003-094	040	Metcalf fine ore bin: CV 14 to fine ore bin	Wet Scrubber 9 (1974/1974)	1970	Since the year of manufacture is prior to the trigger date (8/24/82) for Subpart LL, this is subject to A.A.C. R18-2-721. The process weight rate equation and 40% opacity standard apply to this source.
003-095 X = ball mill nos. B4, B5, and B6.	041	Metcalf ball mill belts: East & West CV 15-X to CV 16-X; and CV 16-X to CV 17-X.	Wet Scrubber 10 (1974/1974)	1970	Since the year of manufacture is prior to the trigger date (8/24/82) for Subpart LL, this is subject to A.A.C. R18-2-721. The process weight rate equation and 40% opacity standard apply to this source.
003-096	071	Metcalf fine ore bin: CV 14 to fine ore bin	Wet Scrubber 15 (10/18/96)	1996	Since the year of manufacture is after the trigger date (8/24/82) for Subpart LL, this is subject to the PM standard of 0.05 grams per dry standard cubic meter (g/dscm).
003-097 to 003-099 X = ball mill nos A1 to A6 and B1 to B3	042 to 044	Metcalf ball mill belts: East & West CV 15-X to CV 16-X; and CV 16-X to CV 17-X.	Wet Scrubbers 11A, 11B, and 12A (1974/1974)	1970	Since the year of manufacture is prior to the trigger date (8/24/82) for Subpart LL, this is subject to A.A.C. R18-2-721. The process weight rate equation and 40% opacity standard apply to this source.
003-100	045	Metcalf fine ore bin: CV 14 to fine ore bin	Wet Scrubber 12B (1974/1974)	1970	Since the year of manufacture is prior to the trigger date (8/24/82) for Subpart LL, this is subject to A.A.C. R18-2-721. The process weight rate equation and 40% opacity standard apply to this source.
003-101 X = ball mill nos. C1 to C3	070	Metcalf ball mill belts: East & West CV 15-X to CV 16-X; and CV 16-X to CV 17-X.	Wet Scrubber 14 (6/18/96)	1996	Since the year of manufacture is 1996 which is after the trigger date (8/24/82) for Subpart LL, this is subject to the PM standard of 0.05 grams per dry standard cubic meter (g/dscm).

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture /Installation	Applicable Regulations
003-102	046	Metcalf primary crshr	Wet Scrubber (1974/1974)	1970	Since the year of manufacture which is prior to the trigger date (8/24/82) for Subpart LL, this is subject to A.A.C. R18-2-721. The process weight rate equation and 40% opacity standard apply to this source.
003-103	047	Metcalf IOS East	Wet Scrubber 1 (1974/1974)	1970	Since the year of manufacture is prior to the trigger date (8/24/82) for Subpart LL, this is subject to A.A.C. R18-2-721. The process weight rate equation and 40% opacity standard apply to this source.
003-104	048	Metcalf IOS West	Wet Scrubber 2 (1974/1974)	1970	Since the year of manufacture is prior to the trigger date (8/24/82) for Subpart LL, this is subject to A.A.C. R18-2-721. The process weight rate equation and 40% opacity standard apply to this source.

Table 9 (contd.): SOUTHWEST LIME PLANT

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture /Installation	Applicable Regulations
004-106	049	Truck to hopper; feeder belt/CV 26; CV 26/belt elevator; belt elevator/CV 27; and CV 27/storage bin transfer points	Baghouse	1974	The lime handling facility at Morenci is subject to the process weight rate equation under A.A.C. R18-2-730. The opacity standard under A.A.C. R18-2-702.B also applies.

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture /Installation	Applicable Regulations
004-107	050	Feeder belt/CV 29; CV 29/ball mill feed hopper; feeder belt/CV 28D; CV 28D/CV 28C; and CV 28C/ball mill feed hopper transfer points	Wet Scrubber	1974	The lime handling facility at Morenci is subject to the process weight rate equation under A.A.C R18-2-730. The opacity standard under A.A.C. R18-2-702.B also applies.

Table 8 (contd.): SX/EW FACILITIES

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture /Installation	Applicable Regulations
009-123	062	20.9 MMBtu/hr steam unit No. 1	None	1995	Since the size of the boiler is greater than 20 MMBtu/hr and the date of construction is after the trigger date for Subpart Dc, this unit is subject to Subpart Dc. Since this unit burns only natural gas, there are only recordkeeping and reporting requirements under Subpart Dc.
009-124	063	1 MMBtu/hr hot water heater No. 1	None	1992	Since the size is less than 10 MMBtu/hr, this heater is subject to A.A.C. R18-2-724. Thus, this source is subject to the process weight rate equation, sulfur dioxide standard of 1.0 lb/MMBtu, and opacity standard of 15%.
009-125	064	1 MMBtu/hr hot water heater No. 2	None	1992	Same as above
009-126	065	1 MMBtu/hr hot water heater No. 3	None	1992	Same as above

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture /Installation	Applicable Regulations
009-127	066	1 MMBtu/hr hot water heater No. 4	None	1995	Same as above
009-128	067	1 MMBtu/hr hot water heater No. 5	None	1995	Same as above
009-129	074	20.9 MMBtu/hr steam unit No. 2	None	1998	Since the size of the boiler is greater than 20 MMBtu/hr and the date of construction is after the trigger date for Subpart Dc, this unit is subject to Subpart Dc. Since this unit burns only natural gas, there are only recordkeeping and reporting requirements under Subpart Dc.
009-130	075	20.9 MMBtu/hr steam unit No. 3	None	1998	Same as above

Table 8 (contd.): MORENCI POWER PLANT

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture /Installation	Applicable Regulations
012-177	058	247 MMBtu/hr Boiler No. 1	None	1941	Since the size of the boiler is less than 250 MMBtu/hr and since the date of construction is prior to the trigger date for Subpart D, this source is subject to A.A.C. R18-2-724. Thus, this source is subject to the process weight rate equation, sulfur dioxide standard of 1.0 lb/MMBtu, and opacity standard of 15%.
012-178	059	247 MMBtu/hr Boiler No. 2	None	1941	Same as above
012-179	060	247 MMBtu/hr Boiler No. 3	None	1943	Same as above
012-180	061	229 MMBtu/hr Boiler No. 4	None	1965	Same as above
012-181	058 and 059	48 MMBtu/hr Superheater No. 1	None	1941	Since the date of construction is prior to the trigger date for Subpart Dc, this source is subject to A.A.C. R18-2-724. Thus, this source is subject to the process weight rate equation, sulfur dioxide standard of 1.0 lb/MMBtu, and opacity standard of 15%.
012-182	060	48MMBtu/hr Superheater No. 2	None	1943	Same as above

Table 8 (contd.): METCALF POWER PLANT

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture /Installation	Applicable Regulations
005-108	051	240 MMBtu/hr Gas Turbine No. 1	None	1970	Since the date of construction is prior to the trigger date for Subpart GG, this source is subject to A.A.C. R18-2-719. Thus, the process weight rate equation, the opacity, and sulfur dioxide standards apply to this source
005-109	052	250 MMBtu/hr Boiler No. 1	None	1970	Since the date of construction is prior to the trigger date for Subpart D, this source is subject to A.A.C. R18-2-703. Thus, this source is subject to the process weight rate equation, sulfur dioxide standard of 1.0 lb/MMBtu, and opacity standard of 40%.
005-110	053	240 MMBtu/hr Gas Turbine No. 1	None	1970	Since the date of construction is prior to the trigger date for Subpart GG, this source is subject to A.A.C. R18-2-719. Thus, the process weight rate equation, the opacity, and sulfur dioxide standards apply to this source
005-111	054	250 MMBtu/hr Boiler No. 2	None	1970	Since the date of construction is prior to the trigger date for Subpart D, this source is subject to A.A.C. R18-2-703. Thus, this source is subject to the process weight rate equation, sulfur dioxide standard of 1.0 lb/MMBtu, and opacity standard of 40%.

Table 8 (contd.): DIESEL GENERATOR

Operation Id No. - Process No.	Stack No.	Process Description	Control Device	Year of Manufacture /Installation	Applicable Regulations
007-115	073	Caterpillar 4600 Kw Diesel Generator	None	1971	This source is subject to A.A.C. R18-2-719. Thus, the process weight rate equation, the opacity, and sulfur dioxide standards apply to this source

VI. PREVIOUS PERMITS AND CONDITIONS

A. Previous Permits

Table 9 lists some of the previous permits that have been issued to PDMI.

Table 9: Listing of Permits

Permit No.	Issue Date	Application Basis
0325-85	9/24/84	Operating Permit for mine and mills (issued by ADHS)
1204	12/16/87	Installation Permit for In-pit crushing and conveying (issued by ADEQ)
1235	12/17/91	Installation Permit for surge pile baghouse
0325R1-85	10/25/94	Minor permit revision to increase cathodic copper production
1000036	--	Title V for smelter operation - withdrawn
1000101	--	Title V for electric power generation - withdrawn; combined with current application.
1000110	5/12/95	Minor permit revision to add boiler and hot water heaters
1000206	3/6/96	Minor permit revision to increase copper concentrate production
1000111	6/17/96	Minor permit revision - Metcalf and Morenci ball mills expansion
1000202	--	Application for SVE - withdrawn
M1104190-98	--	Application withdrawn
1000587	12/1/97	Minor permit revision - Metcalf and Modoc SX plants expansion to include wash tank
1000643	12/22/97	Minor permit revision - new Southwest SX expansion
1000318	1/22/98	Minor permit revision - Metcalf ball mill expansion

Permit No.	Issue Date	Application Basis
1000778	5/30/98	Minor permit revision - addition of a new portable grizzly

B. Previous Permit Conditions

Table 10 discusses the previous permits that have been issued to the source. These permits are attached at the end of this document.

Table 10: OPERATING PERMIT NO. 0325-85 (Brief Discussion: PDMI received its first air quality control operating permit no. 0325-85 to operate the equipment associated with the mining and milling of ores at Morenci from the Arizona Department of Health Services in 1984.)

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
I				✓	Att. A, Condition II (A.II)	Condition is hereby streamlined as a part of this Title V permit renewal.
II				✓	B	Same as above.
III				✓	A.XII	Same as above
IV				✓	A.IX	Same as above.
V			✓		-	Not required to be included in Title V permit.
VI				✓	A.III	Condition is hereby streamlined as a part of this Title V permit renewal.
VII				✓	A.II	Same as above.
VIII				✓	A.IV	Same as above.

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
IX.A			✓		-	<p>This condition required PDMI to submit a detailed plan to control fugitive dust from their tailing ponds by November 8, 1984. The detailed plan was to include a section dealing with the maintenance of tailing ponds' fugitive dust control procedure.</p> <p>Since the Permittee has already complied with this condition, this condition is deleted as a part of this Title V permit renewal.</p>
IX.B			✓		-	<p>This condition required PDMI to conduct emission tests before November 16, 1984, on the Scrubber No. 4 on the fine ore crusher at the Morenci concentrator and molybdenum concentrate dryer at the Morenci concentrator.</p> <p>Since the Permittee has already complied with this condition, this condition is deleted as a part of this Title V permit renewal.</p>

Table 10 (contd.): INSTALLATION PERMIT NO. 1204 (Brief Discussion: This installation permit was issued to PDMI for the installation of their in-pit crushing and conveying (IPCC) system by the Arizona Department of Environmental Quality (ADEQ) in 1987.)

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
1				✓	B.II	Condition is hereby streamlined for operation of the source as a part of this Title V permit renewal.

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
2				✓	B.II	Condition for particulate matter emission rate is hereby streamlined as a part of this Title V permit renewal.
3				✓	B.II	Condition is hereby streamlined as a part of this Title V permit renewal.
4.a				✓	B.II	Same as above.
4.b				✓	B.II	Same as above.
5		✓			B.II	Condition is hereby carried over to the Title V permit as a part of this Title V permit renewal.
6			✓		-	Since the Permittee has already complied with this condition, this condition is hereby deleted as a part of this Title V permit renewal.
7			✓		-	Since the Permittee has already complied with this condition, this condition is hereby deleted as a part of this Title V permit renewal.
8	✓				B.II	Condition is hereby revised to indicate the maximum capacity of the crushers as a part of this Title V permit renewal.
9				✓	B.XI	Condition is hereby streamlined as a part of this Title V permit renewal.
10			✓		-	Since the Permittee has already complied with this condition, this condition is hereby deleted as a part of this Title V permit renewal.
11			✓		-	Since the Permittee has already complied with this condition, this condition is hereby deleted as a part of this Title V permit renewal.

Table 10 (contd.): INSTALLATION PERMIT NO. 1235 (Brief Discussion: PDMI obtained this

installation permit for the installation of a baghouse for the surge pile in 1991.)

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
Att. B.I			✓		-	Condition is hereby deleted as a part of this Title V permit renewal since the baghouse has been installed already.
Att. B.II.A				✓	B.II	Condition for particulate matter emission rate is hereby streamlined as a part of this Title V permit renewal.
Att. B.II.B				✓	B.II	Condition for opacity standard is hereby streamlined as a part of this Title V permit renewal.
Att. B.II.C			✓		-	Attachment "C" is a mere reflection of the potential to emit (based on 8760 hrs/yr operation) and the Condition is hereby deleted as a part of this Title V permit renewal.
Att. B.III			✓		-	Sampling ports, platforms, and access were provided by the source. The Condition is hereby deleted as a part of this Title V permit renewal.
Att. B.IV.A			✓		-	The Condition is hereby deleted as a part of this Title V permit renewal since the performance test was conducted.
Att. B. IV.B			✓		-	The Condition is hereby deleted as a part of this Title V permit renewal since the performance test was conducted.

Table 10 (contd.):

MINOR PERMIT REVISION NO. 0325R1-85 (Brief Discussion: PDMI obtained this minor permit revision in 1994. This minor permit revision is associated with the expansion of Metcalf and Modoc SX facilities by the addition of two mixer/settler tanks at each facility. PDMI also sought to expand the Southside electrowinning tankhouse by adding more electrowinning cells.)

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
Att. B.I			✓		-	Attachment "C" of this permit placed limits (PTE) on the emissions of VOCs from all the SX plants and the sulfuric acid mist from the tankhouses. The VOC emissions were based on batch operations whereas the source operates the plants at a steady state. Emissions from steady state operations are relatively low compared to batch operations. Attachment "C" is a mere reflection of the potential to emit (based on 8760 hrs/yr operation) and the Condition is hereby deleted as a part of this Title V permit renewal.
Att. B.II			✓		-	This condition states that the permit constitutes an installation permit for the purposes of applicable SIP. The Condition is hereby deleted as a part of this Title V permit renewal.

Table 10 (contd.):

MINOR PERMIT REVISION NO. 1000110 (Brief Discussion: This minor permit revision was issued to PDMI in 1995 for the addition of a new 20.9 MMBtu/hr natural gas-fired boiler to the Southside tankhouse and the addition of two new 1 MMBtu/hr hot water heaters at the Central tankhouse.)

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
Att. B.I				✓	B.VIII	This condition states the applicable requirements for the boiler and the hot water heaters. This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B.II				✓	B.VIII	Condition is hereby streamlined as a part of this Title V permit renewal.
Att. B.III.A				✓	B.VIII	Condition is hereby streamlined as a part of this Title V permit renewal.

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
Att. B.III.B				✓	B.VIII	Condition is hereby streamlined as a part of this Title V permit renewal.
Att. B.IV				✓	B.VIII	Condition is hereby streamlined as a part of this Title V permit renewal.

Table 10 (contd.): MINOR PERMIT REVISION NO. 1000206 (Brief Discussion: This minor permit revision was issued to PDMI in 1996 to expand the Metcalf fine crushing plant to include one heavy duty standard crusher, two heavy duty shorthed crushers, and associated conveyance and ore storage equipment.)

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
Att. B.I			✓		-	This condition states that the permit constitutes an installation permit for the purposes of applicable SIP. The Condition is hereby deleted as a part of this Title V permit renewal.
Att. B.II				✓	-	This condition states the applicable requirements for the boiler and the hot water heaters. This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B.III.A				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B.III.B				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B. IV.A				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B. IV.B				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
Att. B. V.A				✓	B.IV	Since the performance tests were done, this condition is hereby deleted as a part of this Title V permit renewal.
Att. B. V. B				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B. V. C				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B. V. D				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B. VI.A				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B. VI.B				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B. VI.C				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.

Table 10 (contd.): MINOR PERMIT REVISION NO. 1000111 (Brief Discussion: This minor permit revision was issued to PDMI in 1996 to add a ball mill and associated transfer point at both the Metcalf and Morenci concentrators.)

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
Att. B.I			✓		-	This condition states the applicable requirements for the conveyor belt transfer points. This condition is hereby streamlined as a part of this Title V permit renewal.

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
Att. B.II				✓	B.III and IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B. III.A				✓	B.III and IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B. III.B				✓	B.III and IV	This condition is hereby streamlined as a part of this Title V permit renewal.

Table 10 (contd.): MINOR PERMIT REVISION NO. 1000587 (Brief Discussion: This minor permit revision was issued to PDMI in 1997 to expand the Modoc and Metcalf SX plants to include two wash stage tanks at each plant to remove the entrained manganese and iron.)

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
Att. B I			✓		-	This condition states that the permit constitutes an installation permit for the purposes of applicable SIP. The Condition is hereby deleted as a part of this Title V permit renewal.
Att. B II				✓	-	This condition states the applicable requirements for the new SX tanks. This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B III.A				✓	B.VIII	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B III.B				✓	B.VIII	This condition is hereby streamlined as a part of this Title V permit renewal.

Table 10 (contd.): MINOR PERMIT REVISION NO. 1000643 (Brief Discussion: This permit was issued to PDMI for the addition of four new mixer/settler tanks at the

Southwest solution extraction (SX) plant and the addition of two small industrial steam boilers (20.9 MMBtu/hr each) at the Central electrowinning (EW) tankhouse. In addition, the Central EW tankhouse was converted from copper starter sheets to stainless steel starter sheets.)

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
Att. B I			✓		-	This condition states that the permit constitutes an installation permit for the purposes of applicable SIP. The Condition is hereby deleted as a part of this Title V permit renewal.
Att. B II.A				✓	-	This condition states the applicable requirements for the new tanks. This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B II.A				✓	B.VIII	This condition states the applicable requirements for the new boilers. This condition is hereby streamlined as a part of this Title V permit renewal.
Att B III.A				✓	B.VIII	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B III.B				✓	B.VIII	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B IV.A				✓	B.VIII	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B IV.B				✓	B.VIII	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B IV.C				✓	B.VIII	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B V				✓	B.VIII	This condition is hereby streamlined as a part of this Title V permit renewal.

Table 10 (contd.): MINOR PERMIT REVISION NO. 1000318 (Brief Discussion: This permit was issued to PDMI in 1998 to modify the Metcalf ball mill to include three new ball mills and associated conveying equipment, a new section of the fine ore bin, and extend the fine ore tripper conveyor. Through this minor permit revision two existing ball mills and associated conveying equipment were also removed.)

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
Att. B I			✓		-	This condition states that the permit constitutes an installation permit for the purposes of applicable SIP. The Condition is hereby deleted as a part of this Title V permit renewal.
Att. B II				✓	-	This condition states the applicable requirements for the new affected facilities. This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B III.A				✓	B.IV	This condition for particulate matter emission rate is hereby streamlined as a part of this Title V permit renewal.
Att. B III.B				✓	B.IV	This condition for fugitive emission standard is hereby streamlined as a part of this Title V permit renewal.
Att B IV.A				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att B IV.B				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B V.A				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B V.A				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
Att. B V.C				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B V.D				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B. VI.A				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B. VI.B				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B. VI.C				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.
Att. B. VI.D				✓	B.IV	This condition is hereby streamlined as a part of this Title V permit renewal.

Table 10 (contd.): MINOR PERMIT REVISION NO. 1000778 (Brief Discussion: This permit was issued to PDMI in 1998 for the addition of a portable grizzly.)

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
Att. B I			✓		-	This condition states that the permit constitutes an installation permit for the purposes of applicable SIP. The Condition is hereby deleted as a part of this Title V permit renewal.
Att. B II				✓	-	This condition states the applicable requirements for the new grizzly. This condition is hereby streamlined as a part of this Title V permit renewal.

Condition No.	Determination				Location in Title V Permit	Comments
	Revise	Keep	Delete	Stream-line		
Att. B III.A				✓	B.XIII	This condition is hereby streamlined as a part of the Title V permit renewal.
Att. B III.B				✓	B.XI	This condition is hereby streamlined as a part of the Title V permit renewal.
Att. B III.C				✓	B.XIII	This condition is hereby streamlined as a part of the Title V permit renewal.
Att. B III.D				✓	B.XIII	This condition is hereby streamlined as a part of the Title V permit renewal.
Att. B III.E				✓	B.XI	This condition is hereby streamlined as a part of the Title V permit renewal.
Att. B III.F				✓	B.XI	This condition is hereby streamlined as a part of the Title V permit renewal.
Att. B III.G				✓	B.XIII	This condition is hereby streamlined as a part of the Title V permit renewal.
Att. B IV.1				✓	B.XIII	This condition is hereby streamlined as a part of the Title V permit renewal.
Att. B IV.2		✓			B.XIII	This condition is hereby carried over to the Title V permit as part of this Title V permit renewal.
Att. B V.A		✓			B.XIII	This condition is hereby carried over to the Title V permit as part of this Title V permit renewal.
Att. B V.B		✓			B.XIII	This condition is hereby carried over to the Title V permit as part of this Title V permit renewal.

Minor Permit Revision # 1001184 which will authorize the “mine for leach operation” is currently being

processed. Once the revision is issued, it will be rolled into the Title V permit.

VII. PERIODIC MONITORING

A. Mines, Morenci Concentrator, and Metcalf Concentrator

1. Equipment Subject to Non-NSPS PM and Opacity Standards

These units are subject to the 40% opacity standard under A.A.C. R18-2-702 and particulate matter under A.A.C. R18-2-721.B.2. The permittee is required to establish a baseline opacity level at the exit of each air pollution control equipment under normal representative operating conditions. The permittee is required to make a bi-weekly survey of the visible emissions from the emission units including fugitive emissions. The permittee is required to create a record of the date on which the survey was taken, the name of the observer, and the results of the survey. If the visible emissions do not appear to exceed the baseline opacity level, the permittee would note in the record that the visible emissions were below the baseline opacity, and it did not require a Method 9 to be performed.

If the permittee finds that on an instantaneous basis the visible emissions are in excess of the baseline opacity level but are below the opacity standard, then he is required to make a six-minute Method 9 observation. If this observation indicates opacity in excess of the baseline opacity level but is below the opacity standard then the permittee is required to adjust or repair the controls or the equipment to bring the opacity below baseline level.

If the six-minute reading indicates that the opacity is above both the baseline level and the opacity standard then the permittee is required to adjust the process equipment or process control equipment to bring the opacity below the baseline level. In addition, the permittee shall report it as excess emissions.

If the permittee finds that the visible emissions are less than the baseline opacity, then the permittee is required to record the source of emission, date, time, and result of the test. The permittee is required to adopt a similar approach with fugitive dust emissions at the mine. However, rather than establishing baseline opacity level for fugitive emissions the permittee is required to conduct a visual survey of visible emissions against the 40% opacity standard.

ADEQ believes that the bi-weekly visual survey approach identified in the preceding paragraphs reasonably assure compliance with the opacity and particulate matter standards. The permit requires a representative stack test every year plus periodically monitoring stack opacity to fulfill the periodic monitoring requirements for particulate matter emissions. Although no data is available to directly correlate opacity to particulate matter emissions, doing so would at least indicate potential problems with the air pollution control device. If corrective actions are taken to rectify the problems associated with the pollution control device, then compliance can be inferred on the basis that the source operates its pollution control equipment in a manner consistent with good air pollution control practices. Opacity above the baseline level but less than 40% does not hold the source in violation of the particulate matter standard, but merely requires the source to identify and alleviate the problem by taking corrective actions to reduce the opacity to less than the baseline level. However, not taking corrective actions could potentially hold the source in violation of the permit terms.

Also, it shall be noted that all references to a Method 9 observation shall be construed as meaning a six-minute observation and not a 3-hour performance test.

2. Equipment Subject to NSPS PM and Opacity Standards

These units are subject to the stack opacity standard of 7% (unless controlled by a wet scrubbing emission control device) under 40 CFR 60.382(a)(2), the fugitive opacity standard of 10% under 40 CFR 60.382(b), and the particulate matter standard of 0.05 grams per dry standard cubic meter under 40 CFR 60.382(a)(1).

For the purposes of periodic monitoring of particulate matter emissions, the permittee is required to install, calibrate, maintain, and operate monitoring devices for continuous measurement of the change in pressure of the gas stream through the scrubber and the scrubbing liquid flow rate to the scrubber. For the purposes of periodic monitoring of opacity of fugitive emissions, the permittee is required to adopt the bi-weekly visual survey of visible emissions approach identified above against the applicable fugitive opacity standard of 10%.

B. Morenci Steam Power Plant**Boiler Nos. 1, 2, 3, and 4 and Superheater Nos. 1 and 2**

1. Opacity:
The units are subject to the opacity standard of $\leq 15\%$ under the A.A.C. R18-2-724.J. The permittee is limited to burn only natural gas in the units. Natural gas is a clean burning fuel and inspections indicate that there have been no opacity problems with these units. Hence, no monitoring is required when burning natural gas.
2. PM:
The units are also subject to the particulate matter emissions standard in A.A.C. R18-2-724.C.1. The permittee is limited to burn only natural gas in these units. Natural gas is a clean burning fuel and results in negligible particulate matter emissions as demonstrated by engineering calculations and tabulated under the PTE column in Table 4. Hence, no monitoring is required when burning natural gas.
3. SO₂:
There is no applicable standard and hence no monitoring is required.
4. Nox:
There is no applicable standard and hence no monitoring is required. However, in accordance with ADEQ's policy of testing "major" units of emissions, permittee shall test Boiler nos. 1 through 3 once when they have been operated individually for 2950 hours on a twelve month rolling total basis. Permittee shall test Boiler No. 4 once when it has been. No such testing is required for the Superheaters. When operated for 3175 hours on a twelve month rolling total basis.

C. Metcalf Combined Cycle Power Plant

Steam Unit 1 and Gas Turbine No. 1 have the ability to be operated in combined cycle operation or simple cycle operation. Under combined cycle operation, exhaust from Gas Turbine No. 1 is used to provide intake air to the Steam Unit No. 1 windbox. This is done to increase the load output and efficiency of the system. When GT1 is run independent of Steam Unit 1, the air flow control dampers direct exhaust to the atmosphere instead of the Steam Unit 1 intake airstream. If Steam Unit 1 is run without GT1, the flow control dampers from the turbine are closed and the unit solely relies on

the unit's two forced draft fans to provide intake air to the windbox. Similarly, Steam Unit 2 and Gas Turbine No. 2 have the ability to be operated in combined cycle operation or simple cycle operation.

1. Steam Unit 1/Combined Cycle Operation of Steam Unit 1 and Gas Turbine No. 1 and Steam Unit 2/Combined Cycle Operation of Steam Unit 2 and Gas Turbine No. 2

a. Opacity:

The steam units are subject to the opacity standard of $\leq 40\%$ under the general visible emissions rule in A.A.C. R18-2-702.B. The units burn natural gas primarily and are capable of burning diesel.

Natural gas: Natural gas is a clean burning fuel and inspections indicate that there have been no opacity problems with this unit. Hence, no monitoring is required when burning natural gas.

Diesel: When diesel is burned, the Permittee is required to monitor and record opacity according to the following schedule:

1. When diesel is burned continuously for a time period > 48 hours but less than 168 hours, then one EPA Method 9 reading is required.
2. When diesel is burned continuously for a time period > 168 hours, then for each 168 period one EPA Method 9 reading is required.

The permittee is also required to monitor and record the number of hours diesel is burned continuously in the units. This approach is consistent with the periodic monitoring requirements that were established for the electric utilities.

b. PM:

The units are also subject to the particulate matter emissions standard in A.A.C. R18-2-703.C.1. This unit burns natural gas primarily and are capable of burning diesel.

Natural gas: Natural gas is a clean burning fuel and results in negligible particulate matter emissions as demonstrated by engineering calculations and tabulated under the PTE column in Table 4. Hence, no monitoring is required when burning natural gas.

Diesel: When diesel is burned in the units, the Permittee is required to monitor particulate matter emissions by monitoring the fuel burned in the unit. The permittee is also required to monitor the following information about the fuel found in the contractual agreement with the liquid fuel vendor:

1. Heating value; and
2. Ash content.

Ash content is not an accurate measure but is a good indicator of particulate matter emissions, and monitoring this would help the agency to “ballpark” the particulate matter emissions. No engineering estimation using ash content is prescribed in the permit since it could be interpreted to incorrectly correlate particulate matter emissions to ash content only. Permittee is required to keep on record a copy of the contractual agreement. Table 4 compares the PTE, allowable emissions, test data, and actual emissions for these units.

c. SO₂:

The steam units are subject to the sulfur dioxide standard in A.A.C. R18-2-703.E.1. This standard applies only when the units burn diesel. There is no standard when the units burn natural gas.

Diesel: When diesel is burned, the Permittee is required to keep on record the fuel supplier certification including the following

information:

1. The name of the oil supplier;
2. The sulfur content and the heating value of the fuel from which the shipment came from; and
3. The method used to determine the sulfur content of the oil.

Permittee is required to make engineering calculations for SO₂ emissions using the information from above according to the following equation for any change in (2) above:

$$\text{SO}_2 \text{ (lb/MMBtu)} = 2.0 \times [(\text{Weight percent of sulfur}/100) \times \text{Density (lb/gal)}] / [(\text{Heating value (Btu/gal)}) \times (1 \text{ MMBtu}/1,000,000 \text{ Btu})]$$

Table 4 compares the PTE, allowable emissions, test data, and actual emissions for these units.

d. NO_x:

The steam units were placed in commercial operation in 1970. The nitrogen oxides standard under A.A.C. R18-2-703.I does not apply to these units and no monitoring is required. However, in accordance with ADEQ's policy of testing "major" units of emissions, permittee shall test Steam Unit 1 once when it has been individually operated for 2950 hours during the permit term. Permittee shall test Steam Unit 2 once when it has been individually operated for 3175 hours during the term of the permit.

2. Gas Turbine Nos. 1 and 2

a. Opacity:

The turbines are subject to the opacity standard of $\leq 40\%$ in A.A.C. R18-2-719.E. Gas turbine Nos. 1 and 2 burn natural gas primarily and are capable of burning diesel.

Natural gas: Natural gas is a clean burning fuel and usually does not

pose a visible emissions problem. Hence, no monitoring is required when burning natural gas.

Diesel: However, when diesel is burned, the Permittee is required to monitor and record opacity according to the following schedule:

1. When diesel is burned continuously for a time period > 48 hours but less than 168 hours, then one EPA Method 9 reading is required.
2. When diesel is burned continuously for a time period > 168 hours, then for each 168 hour period one EPA Method 9 reading is required.

The permittee is also required to monitor and record the number of hours diesel is burned continuously in the units. This approach is consistent with the periodic monitoring requirements that were established for the electric utilities.

b. PM:

The units are also subject to the particulate matter emissions standard in A.A.C. R18-2-719.C.1.

Natural gas: Natural gas is a clean burning fuel and results in negligible particulate matter emissions as demonstrated by engineering calculations and tabulated under the PTE column in Table 4. Hence, no monitoring is required.

Diesel: However, when diesel is burned in the units, the Permittee is required to monitor particulate matter emissions by monitoring the fuel burned in the units. The permittee is also required to monitor the following information about the fuel found in the contractual agreement with the liquid fuel vendor:

1. Heating value; and
2. Ash content.

Ash content is not an accurate measure but is a good indicator of particulate matter emissions, and monitoring this would help the agency to “ballpark” the particulate matter emissions. No engineering estimation using ash content is prescribed in the permit since it could be interpreted to incorrectly correlate particulate matter emissions to ash content only. Permittee is required to keep on record a copy of the contractual agreement. Table 4 compares the PTE, allowable emissions, test data, and actual emissions for this unit.

c. SO₂:

The gas turbines are subject to the sulfur dioxide standard in A.A.C. R18-2-719.F. This standard applies only when the units burn diesel. A.A.C. R18-2-719.J requires reporting of all periods when the sulfur content of the fuel exceeds 0.8 percent by weight and this has been included in the permit as an emission limitation.

Natural gas: "Pipeline-quality" natural gas has to conform to standards approved by the Federal Energy Regulatory Commission (FERC). One of the FERC standards limits the sulfur content in the gas to less than 5 grains/100 scf (which is equivalent to 0.017 weight percent of sulfur). Another standard specifies that the heating value must be greater than or equal to 967 Btu per cubic foot. PDMI runs the gas turbines with fuel drawn from their pipeline, and therefore maintaining a copy of the FERC approved Tariff agreement on-site is an adequate means of complying with the monitoring requirements for the particulate, opacity and fuel use standards.

Diesel: When diesel is burned, the Permittee is required to keep on record fuel supplier certification including the following information:

1. The name of the oil supplier;
2. The sulfur content and the heating value of the

3. fuel from which the shipment came from; and
The method used to determine the sulfur content of the oil.

Permittee is required to make engineering calculations for SO₂ emissions using the information from above according to the following equation for any change in the conditions above:

$$\text{SO}_2 \text{ (lb/MMBtu)} = 2.0 \times [(\text{Weight percent of sulfur}/100) \times \text{Density (lb/gal)}] / [(\text{Heating value (Btu/gal)}) \times (1 \text{ MMBtu}/1,000,000 \text{ Btu})]$$

Table 4 compares the PTE, allowable emissions, test data, and actual emissions for this unit.

d. Nox and CO:

Although there is no applicable standard for nitrogen oxides and carbon monoxide, the permittee is required to monitor the dates and hours of operation of the engines for the purposes of testing. The source has been required to be tested once during the term of the permit according to the schedule given below, if necessary. The turbines have been determined to cross the major threshold (100 tpy) according to the following schedule:

1. Gas Turbine Nos. 1 and 2: When operated individually for 1825 hours on a twelve month rolling total basis.

The hours were derived assuming natural gas is burned in the units. The tests will be conducted when burning the primary fuel. The permit requires the permittee to report the dates and hours of operation of the turbines semi-annually, during the six months prior to the date of report. Table 4 compares the PTE, allowable emissions, test data, and actual emissions for this unit.

D. Southwest Lime Plant

Opacity and Particulate Matter Standard

The emission units are subject to the opacity standard of 40% under A.A.C. R18-2-702.B and the particulate matter under A.A.C. R18-2-722.B.2. For the purposes of periodic monitoring of particulate matter emissions, the permittee is required to install, maintain, calibrate, and operate monitoring devices to determine the daily process weight of the Southwest Lime Plant.

For the purposes of periodic monitoring of opacity of emissions and particulate matter emissions, the permittee is required to adopt the bi-weekly visual survey of visible emissions approach identified in the previous section of this technical remarks document.

In addition, the permittee is required to maintain and operate the air pollution control equipment in accordance with the manufacturer's specification. Permittee is also required to hold these specifications on file. Emissions related maintenance work performed on the air pollution control equipment and/or the process equipment need to be recorded.

E. SX/EW Operations

1. SX/EW Plant

The intent of A.A.C. R18-2-730.D as applicable to the SX/EW process is to limit emissions from the equipment and operations associated with the SX/EW process so as to not cause air pollution. PDMI uses covered fixed roof mixer/settler tanks for all SX facilities and their associated ancillary process tanks. The potential emissions from these tanks as estimated by the worksheet developed by ADEQ for fixed roof tanks total 7.59 tpy which is considerably below the significance level established for VOCs in A.A.C. R18-2-101.97.

The intent of A.A.C. R18-2-730.F as applicable to the SX/EW process is to reduce evaporation of materials into the atmosphere used in the SX/EW process at various stages (processing, storage, usage, and transportation) so as to not cause air pollution. The Permittee uses covered mixer/settler and ancillary process tanks in the SX/EW process. The VOC emission levels are well below the significance level of 40 tpy. The conservative total *uncontrolled*

emission estimate of sulfuric acid from the both the tankhouses is 19.66 tpy which is greater than the significance level of 7 tpy for sulfuric acid mist. However, this does not take into account the usage of foam fm-1100 by the Permittee to control the mist. Also, the sulfuric acid mist is estimated by using the maximum allowable exposure limit of $1\text{mg}/\text{m}^3$ set by OSHA and multiplying this by the air flow rate out of the building.

Usage of covered mixer settler tanks was prescribed as a control measure for the SX circuit. This was done following the site visits by the permit engineers to their respective facilities and the fact that almost all of the sources utilized covered roofs. However, the agency recognizes that some of the older tanks have uncovered weirs and clarifies that the control requirement in the permit shall not be construed as meaning that the older tanks be retrofitted.

2. SX/EW Hot Water Heater Nos. 1 through 5

Opacity:

The units are subject to the opacity standard of $< 15\%$ under the A.A.C. R18-2-724.J. The permittee is limited to burn only natural gas in the units. Natural gas is a clean burning fuel and inspections indicate that there have been no opacity problems with these units. Hence, no monitoring is required when burning natural gas.

PM:

The units are also subject to the particulate matter emissions standard in A.A.C. R18-2-724.C.1. The permittee is limited to burn only natural gas in these units. Natural gas is a clean burning fuel and results in negligible particulate matter emissions as demonstrated by engineering calculations and tabulated under the PTE column in Table 4. Hence, no monitoring is required when burning natural gas.

SO_2 :

There is no applicable standard and hence no monitoring is required.

Nox:

There is no applicable standard and hence no monitoring is required.

3. Steam Unit Nos. 1, 2, and 3

Permittee is limited to burn only natural gas in these units. There are no emission standards for opacity, particulate matter, SO_x, or NO_x. However, permittee is required to maintain amounts of fuel combusted each day in these units. This requirement can be complied with by maintaining a record of monthly natural gas purchase bills.

F. Non-Point Sources Monitoring

Non-point sources are subject to the 40% opacity standard and other Article 6 requirements. Periodic monitoring for opacity standard entails a bi-weekly visible emissions survey in accordance with an ADEQ - approved observation plan, by a certified Method 9 observer. If the visible emissions survey indicates that a Method 9 reading may be required, the observer shall do so, and maintain records of the results. Any observed exceedance of the opacity standard should be reported appropriately.

Article 6 regulations also contain applicable requirements for non-point source emissions. These regulations require the Permittee to employ various control methods to suppress particulate emissions. The permit lists the various methods of dust suppression that may be used. By not restricting the Permittee to use only one of the methods, the permit provides the flexibility required to facilitate employment of effective control measures. Periodic monitoring data for these applicable requirements is generated in two ways by this permit :

- (i) the bi-weekly visual opacity observations conducted as monitoring for the 40% opacity standard will provide data that can be used to investigate the level of particulate emissions from non-point sources during a compliance timeframe.
- (ii) the Permittee is required to maintain a record of the kind of control measures that were employed to suppress particulate emissions. This periodic monitoring requirement is specified in the "Non Point Sources" section of Attachment B of the permit. In recognition of the fact that this requirement may sometimes be highly paper-intensive and result in reduced flexibility of operations, the permit provides an alternative that the Permittee may maintain a Non-Point Source Monitoring Plan that serves as a record of the control measures that were employed by the Permittee to mitigate dust emissions from non-point sources. To satisfy its function as a monitoring tool, the Non-Point Source Monitoring Plan should contain some

minimum elements of information such as :

- (1) Types of control measures employed on an activity-specific basis;
- (2) Frequency of application of control measures;
- (3) A system for logging variations from the strategy outlined in the Non-Point Source Monitoring Plan

The Non-Point Source Monitoring Plan has to be submitted as part of the initial application, and will undergo public and EPA review along with the rest of the permit. If the Permittee fails to submit the Non-Point Source Monitoring Plan along with the initial application, the Permittee will be required to comply with the monitoring requirements, till such time that a significant revision is processed to allow the Permittee to avail of the Monitoring Plan. As part of the significant revision procedures, the Non-Point Source Monitoring Plan will undergo public and EPA review.

It should be noted that the Non-Point Source Monitoring Plan is a monitoring tool. Additions to methods listed in the original Non-Point Source Monitoring Plan need to be notified to the Director. These notifications will have to be recorded in the Non-Point Source Monitoring Plan by the Permittee, and will also be added to the copy of the Non-Point Source Monitoring Plan that is maintained at ADEQ. There is one situation where prior approval from the Director is required. The permit lists a series of “reasonable precautions” that may be employed by the Permittee. If the Permittee desires to use a new method, prior approval for usage of this mechanism has to be obtained from the Director. Once approval is granted, the Permittee can initiate usage of the product, and record its usage in the Non-Point Source Monitoring Plan.

VIII. INSIGNIFICANT ACTIVITIES

The following activities were listed as insignificant by the Permittee in their application and have been deemed either insignificant or not insignificant by the Department:

Table 11: Insignificant Activity List

S. No.	Activity	Determination	Justification
1	Non-commercial (in-house) experimental, analytical laboratory equipment which is bench scale in nature including quality control/quality assurance laboratories supporting an electric utility facility, and research and development laboratories.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
2	Small pilot scale research and development projects.	No	These will be evaluated on a case by case basis considering size, nature and amount of emissions, and duration of project. Appropriate permits will have to be obtained as required by the regulations
3	Housekeeping activities and associated products used for cleaning purposes, including collected spilled and accumulated materials at the source, including operation of fixed vacuum cleaning systems for such purposes.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.a
4	Air conditioning, cooling, heating or ventilation equipment not designed to remove air contaminants generated by or released from associated or other equipment.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.a
5	General office activities, such as paper shredding, copying, photographic activities, and blueprinting, but not to include incineration.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
6	Restroom facilities and associated cleanup operations and stacks or vents used to prevent the escape of sewer gasses through plumbing traps.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.a
7	Smoking rooms and areas.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
8	Use of consumer products, including hazardous substances as that term is defined in the Federal Hazardous Substances Act (15 U.S.C. 1261, et. seq.) where the product is used at a source in the same manner as normal consumer use.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
9	Vacuum cleaning systems where the system is used exclusively for industrial or commercial use.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
10	Building maintenance and janitorial activities.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.a

S. No.	Activity	Determination	Justification
11	Batch mixers with rated capacity of 5 ft ³ or less.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.d
12	Internal combustion (IC) engine driven compressors, IC engine electrical generator sets and IC engine driven water pumps used only for emergency replacement or standby service.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.h
13	Water treatment or storage for boiler feed water.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
14	Water treatment or storage or cooling systems for process water.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
15	Chemical storage associated with water and wastewater treatment where the water is treated for consumption and/or use within the permitted facility (limited to chemicals not listed in 40 CFR 68.13, chemicals listed in 40 CFR 68.13 but not stored in quantities less than threshold levels, and not subject to any applicable regulation under the Act or the Arizona Revised Rules).	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
16	The collection, transmission, liquid treatment and solids treatment process and domestic type wastewater and sewage treatment works, or treatment facilities, including septic tank systems which treat only domestic type wastewater and sewage.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
17	Firefighting activities and training conducted at the source in preparation for firefighting.	No	Subject to A.A.C. R18-2-602
18	Open burning activities.	No	Subject to A.A.C. R18-2-602
19	Flares used to indicate danger	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
20	Chemical storage and process holding tanks(limited to chemicals not listed in 40 CFR 68.13, chemicals listed in 40 CFR 68.13 but not stored in quantities less than threshold levels, and not subject to any applicable regulation under the Act or the Arizona Revised Rules)	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
21	Storage and piping of natural gas or liquefied petroleum gas.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j

S. No.	Activity	Determination	Justification
22	Storage and piping of butane or propane.	No	Subject to regulations under A.A.C. R18-2-730
23	Gasoline storage tanks with capacity of 10,000 gallons or less.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.b
24	Diesel fuel storage tanks with capacity of 40,000 gallons or less.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.c
25	Petroleum product storage tanks containing lubricating oil, transformer oil, or used oil.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
26	Distribution and piping of diesel fuel, lubricating oil, used oil and transformer oil.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
27	Storage and handling of drums or other transportable containers where the containers are sealed during storage, and covered during loading and unloading (includes containers of RCRA waste and used oil).	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
28	Waste motor oil collection and recycling.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
29	Storage tanks of any size containing exclusively soaps, detergents, waxes, greases, aqueous caustic solutions, or aqueous salt solutions.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
30	Storage tanks of any size containing exclusively aqueous acid solutions.	No	Subject to A.A.C. R18-2-730
31	Landscaping and site housekeeping equipment.	No	Subject to Article 8 regulations
32	Fugitive emissions from landscaping activities.	No	Subject to Article 6 regulations
33	Use of pesticides, fumigants, and herbicides.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
34	Groundskeeping activities and products.	No	Subject to regulations under Article 6.
35	Shoveling ore to and from belt conveyors and transfer points as part of routine maintenance programs.	No	Subject to A.A.C. R18-2-606
36	Air lance operations	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j

S. No.	Activity	Determination	Justification
37	Mechanized or manual cleanup and haulage operations	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
38	Concentrate reclamation	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
39	Waste concrete handling	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
40	Railroad track maintenance.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
41	Potable wellfield maintenance	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
42	Drilling and well development	No	Subject to regulations under Article 6.
43	Demolition, renovation and salvage operations.	No	Subject to regulations under Article 6 and/or 40 CFR 61, Subpart M
44	Cleanup of ditches	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
45	Stormwater drainage control	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
46	Cleanout of water collection sumps	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
47	Cleanup of railcars	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
48	Cleanup of clogged chutes	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
49	Manual cleanup around conveyor belts and chutes.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
50	Activities associated with the construction, repair or maintenance of roads and other paved or open areas, including operation of street sweepers, vacuum trucks, spray trucks and other vehicles related to the control of fugitive emissions of such roads or other areas.	No	Subject to A.A.C. R18-2-605
51	Unpaved public and private roadways within a stationary source site boundary.	No	Subject to A.A.C. R18-2-605

S. No.	Activity	Determination	Justification
52	Road and lot paving operations at commercial and industrial facilities.	No	Subject to A.A.C. R18-2-604
53	Sanding of streets and roads to abate traffic hazards caused by ice and snow.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
54	Street and parking lot striping.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
55	Fugitive dust emissions from the operation of passenger automobile, station wagon, pickup truck or van at a stationary source.	No	Subject to A.A.C. R18-2-604
56	Small equipment operations such as bobcats and backhoes and other small earth moving activities used as part of facility cleanup and material haulage.	No	Subject to A.A.C. R18-2-604 and 804
57	Tailing dam maintenance.	No	Subject to regulations under Article 6.
58	Cafeterias, kitchens and other facilities used for preparing food or beverages primarily for consumption at the source.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
59	Equipment using water, water and soap or detergent or a suspension of abrasives in water for purposes of cleaning or finishing.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
60	Construction and disturbance of surface areas for purpose of land development.	No	Subject to A.A.C. R18-2-604
61	Activities at a source associated with the maintenance, repair or dismantlement of an emission unit installed at the source, including preparation for maintenance, repair or dismantlement and preparation for subsequent startup, including preparation of a shutdown vessel for entry, replacement of insulation, welding and cutting, and steam purging of a vessel prior to startup.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
62	Maintenance, repair or dismantlement of buildings, utility lines, pipelines, wells, and other structures that do not constitute an emission unit.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
63	Containers, reservoirs, or tanks used exclusively in dipping operations to coat objects with oils, waxes or greases.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j

S. No.	Activity	Determination	Justification
64	Activities directly used in the diagnosis and treatment of disease, injury or other medical condition.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
65	Manually operated equipment used for buffing, polishing, carving, cutting, drilling, machining, routing, sawing, surface grinding or turning and associated venting hoods.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.f
66	Individual sampling points, analyzers, and process instrumentation, whose operation may result in emissions.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
67	Individual equipment that is transportable or activities within a facility established for testing units prior to sale or for purposes of research.	No	Please see comment on S. No. 2.
68	Individual flanges, valves, pump seals, pressure relief valves and other individual components that have the potential for leaks.	No	Subject to A.A.C. R18-2-730
69	Brazing, soldering or welding operations.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
70	Battery recharging areas.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
71	Aerosol can usage.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
72	Plastic pipe welding.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
73	Acetylene, butane and propane torches.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
74	Architectural painting and associated surface preparation for maintenance purposes at individual or commercial facilities.	No	Subject to A.A.C. R18-2-727
75	Steam vents, condenser vents and boiler blowdown	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
76	Equipment used exclusively for portable steam cleaning.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
77	Blast-cleaning equipment using a suspension of abrasive in water and any exhaust system or collector serving them exclusively.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j

S. No.	Activity	Determination	Justification
78	Surface impoundments such as ash ponds, cooling ponds, evaporation ponds, settling ponds and storm water ponds.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
79	Pump/motor oil resevoirs, such as gear box lubrication.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
80	Transformer vents.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
81	Lubrication system vents.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
82	Hydraulic system reservoirs.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
83	Adhesive use which is not related to production.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
84	Caulking operations that are not part of a production process.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
85	Electric motors.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
86	Cathodic protection systems.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
87	High voltage induced corona.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
88	Production of hot/chilled water for on-site use not related to any industrial application.	No	Subject to A.A.C. R18-2-724
89	Safety devices such as fire extinguishers.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
90	Soil gas sampling.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
91	Filter draining.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
92	General vehicle maintenance and servicing activities at the source.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
93	Station transformers.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j

S. No.	Activity	Determination	Justification
94	Circuit breakers.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
95	Generation unit gas vents.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
96	Storage cabinets for flammable products.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
97	Fugitive emissions from landfill operations.	No	Subject to A.A.C. R18-2-730
98	HVAC vents.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
99	Wet cyclones and the ball mill circuits operated at the concentrators.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
100	Copper and Molybdenite Floatation.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
101	Copper Concentrate Filtering.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
102	Lime milling and classifying.	Yes	It is a completely wet process. Insignificant pursuant to A.A.C. R18-2-101.54.j
103	Ore, rock, tailing and concentrate reclamation practices.	No	Subject to Article 6 requirements.
104	Graders and Dozers.	No	Subject to Article 8 requirements.
105	General startup and shutdown of process and pollution control equipment including maintenance activities.	No	Subject to corresponding standard.
106	Malfunction of process and pollution control equipment outside the normal operation scenarios.	No	Subject to corresponding standard.
107	General research activities such as testing water mist/spray controls for dust abatement.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
108	Incineration of methane gas and bar screen residue that is retained by the solids bar screen from the primary wastewater treatment facility.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j

S. No.	Activity	Determination	Justification
109	Incineration of used office paper material.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
110	General vehicle refueling, sulfuric acid unloading, used oil collection/processing and used oil storage tanks.	No	Subject to A.A.C. R18-2-730
111	Geologic and hydrogeologic exploration drilling activities.	No	Subject to A.A.C. R18-2-604
112	Ammonium nitrate loading and unloading.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
113	Tire shredding.	Yes	Insignificant pursuant to A.A.C. R18-2-101.54.j
114	The Evan's Point Limestone Quarry facilities including the pan feeder, crusher, and tramway were demolished during late 1996 and early 1997. However, as special projects warrant, limestone may be mined on a small-scale basis, using front-end loaders, ten yard end dump trucks or other similar equipment.	No	Subject to A.A.C. R18-2-604.